Regarding claims 15 and 17, the Examiner states that *Krentz* discloses an integrated broadcast reception system for use in a handheld telecommunications device for receiving broadcast signals, wherein the handheld telecommunications device has a device body, the reception system comprising: an electrically non-conductive substrate located inside the device body, an electrically conductive element disposed on the substrate for receiving the broadcast signals, and signal processing module (**28**, Figure 2) disposed on the substrate adjacent and electrically connected to one end of the electrically conductive element, responsive to the received signals, for processing the received signals (Figures 1 and 7; p. 3, line 25 – p.7, line 28).

The Examiner admits that *Krentz* does not disclose broadcast signals being frequency modulated and signal processing modules for selecting broadcast frequency bands substantially in a frequency range of 88MHz –108MHz, or 53MHz – 99MHz. The Examiner points to *Ichikawa* for disclosing a receiver for receiving digital audio broadcast programs and FM broadcast programs wherein the broadcast signals are frequency modulated; broadcast signals are digital broadcast signals; and the signal processing signal module is for selecting broadcast frequency band. The Examiner further cites *Bannerman* for disclosing an electronic antenna for receiving broadcast signals in the frequency range of 88 MHz – 108 MHz and 53 MHz – 99 MHz (col.1, lines 48-54).

It is respectfully submitted that claim 15 claims:

An integrated broadcast reception system for use in a hand-held telecommunication device for receiving broadcast signals, wherein the hand-held telecommunication device has a device body, the reception system comprising:

(a) an electrically non-conductive substrate located inside the device body;

(b) an electrically conductive element, disposed on the substrate, for receiving the broadcast signals; and

(c) a signal processing module disposed on the substrate adjacent and electronically connected to one end of the electrically conductive element, responsive to the received signals, for processing the received signals, wherein the broadcast signals are frequency-modulated signals, and wherein the broadcast signals are substantially in a frequency range of 88 MHz - 108 MHz.

Claim 17 claims:

An integrated broadcast reception system for use in a hand-held telecommunication device for receiving broadcast signals, wherein the hand-held telecommunication device has a device body, the reception system comprising:

(a) an electrically non-conductive substrate located inside the device body;

(b) an electrically conductive element, disposed on the substrate, for receiving the broadcast signals; and

(c) a signal processing module disposed on the substrate adjacent and electronically connected to one end of the electrically conductive element, responsive to the received signals, for processing the received signals, wherein the broadcast signals are digital broadcast signals, and wherein the broadcast signals are substantially in a frequency range of 88 MHz - 108 MHz.

From the context of the claims, it is clear that:

item (b) is an antenna for receiving frequency-modulated broadcast signals in the 88MHz-108MHz range, and that

item (c) is used for processing the received frequency-modulated broadcast signals in the 88MHz-108MHz range.

Krentz DOES NOT DISCLOSE A SIGNAL PROCESSING MODULE FOR PROCESSING BROADCAST SIGNALS

The Examiner states that *Krentz* discloses a signal processing module (**28**, Figure 2) disposed on the substrate adjacent and electrically connected to one end of the electrically conductive element, responsive to the received signals, for processing the received signals (Figures 1 and 7; p. 3, line 25 – p.7, line 28).

It is respectfully submitted that item **28** in Figure 2 is not equivalent to item (c) in claims 15 and 17. As stated above, item (c) is used for processing the received broadcast signal. In contrast, item **28** in Figure 2 of *Krentz*, is not a signal processing module for processing the received broadcast signals, as discussed below:

At p.4, lines 5-18, *Krentz* discloses that the processor (MCU **28**) controls the switch **22** either

(1) to route AM band radio frequency signals received by the auxiliary antenna **20** to the AM broadcast receiver **24** so as to allow a user to listen to an AM radio program, or

(2) to route AM band radio frequency signals associated with a peripheral device **42** to the application interface circuit **26**. At p.4, line 10 to line 14, *Krentz* discloses that the application interface circuit process data signals included in the AM band radio frequency signals **36** to communicate with the peripheral device **42**.

In the first function, the processor **28** controls the switch **22** to route AM band radio frequency signals to the AM receiver **24**. The processor **28** does not receive or process broadcast signals.

In the second function, the relevant devices that have a relationship with the processor **28** are the application interface circuit **26** and the peripheral device **42**. At p.5, line 33 to p.6, line 13, *Krentz* discloses that the peripheral device **42** is a radio-frequency identification (RFID) system peripheral. In Figure 2, *Krentz* discloses that the application interface circuit **26** has a 400kHz receiver **104** and a 200KHz transmitter **108** to communicate with the RFID **42**. The application interface circuit **26** provides a signal **114** to the processor **28**. The signal **114** received by the processor **28** (see Figure 3) is a signal presence indicator (SPI) provided by the 400kHz receiver which is used to indicate the presence of an interrogation signal. Thus, signal **114** is not AM frequency signal from the antenna **20**. Furthermore, the application interface circuit **26** receives a signal **116** from the process **28**. The signal **116** is an identification (ID) code generated by the processor **28** in response to an SPI value **114** so that the ID code, after BPSK modulation, can be transmitted through a 200KHz transmitter.

It is well-known in the art that communication signals involving 400KHz or 200KHz are short-range signals intended for communication between two devices located within a short distance. These communication signals are not broadcast signals as known in the art.

Based on the above analysis, the processor **28** is used either to control a switch for routing AM radio band signal to an AM broadcast receiver, or to provide an ID code to a

400KHz/200KHz application interface circuit in response to an SPI value. The processor **28** is not used for processing broadcasting signals in either situation.

In contrast, the claimed invention has the limitation that the signal processor is electrically connected to the conductive element to process received broadcast signals. *Krentz* does not disclose such a feature.

For the above reasons, *Krentz* is irrelevant to the claimed invention.

The Examiner also cites *Bannerman* for disclosing an electronic antenna for receiving broadcast signals in the frequency range of 88 MHz – 108 MHz and 53 MHz – 99 MHz (col.1, lines 48-54).

Bannerman DOES NOT PROVIDE A MOTIVATION FOR A PERSON SKILLED IN THE ART

It is respectfully submitted that *Bannerman* discloses a metal pickup plate (10) which can be concealed in the crash panel of an automobile to pick up AM/FM signals. The pickup plate must be connected to a broad-band RF pre-amplifier comprising an input transformer T1, a double-tuned transformer T2 and other switching elements Q1 – Q3. Such a pickup plate must be large in size even for FM frequencies because of the lambda/2 requirement. In addition, the pre-amplifier comprises transformers which are also generally very large in size.

The present invention is concerned with a hand-held communication device. As disclosed on p. 5, lines 9-24 of the specification, the objective of the present invention is to reduce the physical size or dimension of the antenna 10 and that of the substrate 5. If the frequency of the carrier wave is 88MHz, then the wavelength of the carrier waves is approximately 341cm. With present invention, the physical size of the antenna 10 and that of the substrate 5 can be made much smaller than the quarter-wavelength, or 83cm because the substrate is flexible to be rolled up and the antenna can be wound around to form a helix or a coil.

It is difficult to imagine how the metal pickup plate 10 and the transformers in the pre-amplifier as disclosed in *Bannerman* can be fitted inside a hand-held telecommunications device

having a substrate and antenna smaller than a quarter-wavelength for receiving broadcast signals. Accordingly, it is not believed that one of ordinary skill in the art would reasonably be motivated to go to the field of automotive crash panel system to solve the problem of implementing an FM antenna in a hand-held telecommunication device such as a mobile phone. Physically, the crash panel pick-up plate is incompatible with the requirements for a broadcast signal receiver in a hand-held telecommunication device.

The Examiner further cites *Ichikawa* for disclosing a receiver for receiving digital audio broadcast programs and FM broadcast programs wherein the broadcast signals are frequency modulated; broadcast signals are digital broadcast signals; and the signal processing signal module is for selecting broadcast frequency band.

NO MOTIVATION FOR A PERSON SKILLED IN THE ART TO COMBINE *Krentz*, *Ichikawa* and *Bannerman*

Krentz is irrelevant to the present invention as claimed because it does not disclose a signal processor located on the substrate adjacent to and electrically connected to the electrically conductive element for processing received broadcast signals in the 88MHz-108MHz range. *Bannerman* fails to disclose an FM antenna system that can be modified to fit inside the device body of a hand-held telecommunication device.

The present invention is concerned with fitting inside a hand-held telecommunication device a small-sized antenna on a substrate for receiving broadcast signals and a signal processor on the same substrate for processing the received broadcast signals. With such an objective, there is no motivation for a person skilled in art to try to combine a reference that does not teach a signal processor for processing broadcast signals with a reference that does not teach an antenna smaller than a quarter-wavelength of the carrier waves. Whether or not *Ichikawa* discloses a signal processing module for selecting broadcast frequency band and that the broadcast signals are frequency modulated signals and digital broadcast signals, there is no motivation to combine the disclosures in *Krentz* and *Bannerman* with *Ichikawa* regardless what *Ichikawa* discloses.

For the above reasons, *Krentz* in view of *Ichikawa* and further in view of *Bannerman* fails to render the invention as claimed in claims 15 and 17 obvious.